UNITED STATES PATENT AND TRADEMARK OFFICE

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 May 2005*.

2a)☐ This action is FINAL.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *26-47* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *26-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 May 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date *7/14/2005, 5/12/2005* .

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____

DETAILED ACTION

Specification

1.   The title of the invention is not descriptive. A new title is required that is clearly

indicative of the invention to which the claims are directed.

       The following title is suggested: "Standard-model generation for speech recognition

using a reference model."

Claim Rejections - 35 USC § 112

1.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

2.   Claim 37 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention. The third paragraph of the claim, reproduced below, is unclear.

"a reference model preparing unit operable to perform at least one of:

obtaining a reference model from an outside source and storing the obtained

reference model into said reference model storing unit; and creating a new

reference model and storing the new reference model into said reference model

storing unit, as well as at least one of updating and adding to the reference

model stored in said reference model storing unit; and"

It is not clear how the limitation is meant to be understood. Sub-indentations are commonly used

to clarify dependent nature of components within a claim. (See MPEP section 608.1(m)). For the

purposes of examination, it will be assumed that the applicant intended to claim as follows:

"a reference model preparing unit operable to perform at least one of:

> [1] obtaining a reference model from an outside source and storing the obtained
>
> reference model into said reference model storing unit;
>
> and
>
> [2] creating a new reference model and storing the new reference model into said
>
> reference model storing unit, as well as at least one of [i] updating and [ii] adding
>
> to the reference model stored in said reference model storing unit; and"

Claim Rejections - 35 USC § 101

3.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or
>
> any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and
>
> requirements of this title.

Claims 45 and 47 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter. Claims 45 and 47 are directed towards computer code,

which does not fall into a recognized statutory category. Examples of acceptable preambles

include: "a computer readable medium encoded with computer executable instructions" or "a

computer readable medium having a stored computer program."

For the purposes of examination, it will be assumed that the applicant intended to claim a

computer-readable article of manufacture embodying the claimed code.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on
>
> sale in this country, more than one year prior to the date of application for patent in the United States.

5.   Claim 26 is rejected under 35 U.S.C. 102(b) as being anticipated by Levinson (US

4,587,670).

Consider claim 26: Levinson discloses a standard model creating apparatus for creating a

standard model which shows an acoustic characteristic having a specific attribute and is used for

speech recognition **(see Col. 5, lines 12-24, where Levinson discusses a speech recognizer and

Col. 12, lines 42-62, where Levinson discusses the model processing steps),** using a

probability model that expresses a frequency parameter showing an acoustic characteristic as an

output probability **(see Col. 5, lines 27-39, where Levinson discusses acoustic features)**, said

standard model creating apparatus comprising: a reference model storing unit operable to store at

least one reference model which is a probability model showing an acoustic characteristic having

a specific attribute **(see Col. 6, lines 6-15, where Levinson discusses stores)**; a reference model

selecting unit operable to select at least one reference model from among the at least one

reference model stored in said reference model storing unit, on the basis of usage information

regarding an attribute which is an object of speech recognition **(see Col. 7, lines 1-15, where Levinson discusses a processor which evaluates the prototype signals in the store and Col. 11, lines 55-65, where Levinson discusses evaluating each stored model)** and a standard model creating unit operable to create the standard model by calculating statistics of the standard model using statistics of the at least one reference model selected by the reference model selection unit **(see Col. 12, lines 42-62, where Levinson discusses a processor which performs the model processing steps)**, wherein said standard model creating unit includes: a standard model structure determining unit operable to determine a structure of the standard model which is to be created **(see Col. 8, lines 20-35, where Levinson discusses the elements which comprise a model)** ; an initial standard model creating unit operable to determine initial values of the statistics specifying the standard model whose structure has been determined **(see Col. 11, lines 50-55, where Levinson discusses prototype probabilities, therefore initial values)**; and a statistics estimating unit operable to estimate and calculate the statistics of the standard model so as to maximize or locally maximize a probability or a likelihood of the standard model, whose initial values have been determined, with respect to the reference model **(see Col. 11, lines 65 – Col. 12, line 5, where Levinson discusses a maximum probability determination)**.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
>
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
>
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the

manner in which the invention was made.

6.   Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Levinson (US 4,587,670) in view of (Ittycheriah (US 5,895,447).

Consider claim 27: Levinson discloses an information creating unit operable to create the

information, wherein said reference selecting unit is operable to select at least one reference

model from among the at least one reference model stored in said reference model storing unit,

on the basis of the created information. **(see Col. 7, lines 1-15, where Levinson discusses a**

processor which evaluates the prototype signals in the store)

Levinson does not specifically disclose usage information, however Ittichyriah discloses usage

information **(see Col. 9, lines 10-18, where Ittichyriah discusses building classes)**. It would

have been obvious to one skilled in the art at the time the invention was made to modify the

invention of Levinson, and use usage information as taught by Ittichyriah, thus increasing the

efficiency of the system, as discussed by Ittichyria **(see Col. 9, lines 10-15)**.

Consider claim 28: Levinson discloses a terminal apparatus via a communication

channel, further comprising an information receiving unit operable to receive the information

from said terminal apparatus **(see Col. 6, lines 52-60 and line 65 – Col. 7, line 5, where**

Levinson discusses loading a model into RAM and Figure 3, where Levinson shows a BUS,

therefore a channel), wherein said reference model selecting unit is operable to select at least

one reference model from among the at least one reference model stored in said reference model

storing unit, on the basis of the received information **(see Col. 7, lines 1-15, where Levinson**

discusses a processor which evaluates the prototype signals in the store.

Levinson does not specifically disclose usage information, however Ittichyriah discloses usage

information (see Col. 9, lines 10-18, where Ittichyriah discusses building classes). It would

have been obvious to one skilled in the art at the time the invention was made to modify the

invention of Levinson, and use usage information as taught by Ittichyriah, thus increasing the

efficiency of the system, as discussed by Ittichyria (see Col. 9, lines 10-15).

7.   Claims 29-34, 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Levinson (US 4,587,670) in view of Stanley (US 5,684,924).

        Consider claim 29: Levinson discloses a standard model creating apparatus for creating a

standard model which shows an acoustic characteristic having a specific attribute and is used for

speech recognition (see Col. 5, lines 12-24, where Levinson discusses a speech recognizer and

Col. 12, lines 42-62, where Levinson discusses the model processing steps), using a

probability model that expresses a frequency parameter showing an acoustic characteristic as an

output probability (see Col. 5, lines 27-39, where Levinson discusses acoustic features), said

standard model creating apparatus comprising: a reference model storing unit operable to store at

least one reference model which is a probability model showing an acoustic characteristic having

a specific attribute (see Col. 5, lines 36-45, where Lau discusses a memory for storing); and a

standard model creating unit operable to create the standard model by calculating statistics of the

standard model using statistics of the at least one reference model stored in said reference model

storing unit (see Col. 12, lines 42-62, where Levinson discusses a processor which performs

the model processing steps), wherein said standard model creating unit includes: a standard

model structure determining unit operable to determine a structure of the standard model which

is to be created on the basis of specification information regarding specifications of the standard

model **(see Col. 8, lines 20-35, where Levinson discusses the elements which comprise a model)**; an initial standard model creating unit operable to determine initial values of the statistics specifying the standard model whose structure has been determined **(see Col. 11, lines 50-55, where Levinson discusses prototype probabilities, therefore initial values)**; and a statistics estimating unit operable to estimate and calculate the statistics of the standard model so as to maximize or locally maximize a probability or a likelihood of the standard model, whose initial values have been determined, with respect to the reference model **(see Col. 11, lines 65 – Col. 12, line 5, where Levinson discusses a maximum probability determination)**.

Levinson does not specifically disclose specification information regarding specifications of the standard model which is to be created, however Stanley discloses specification information regarding specifications of the standard model which is to be created **(see Col. 5, lines 39-49 where Stanley discusses adjusting parameters of the system)**. It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Levinson, and use specifications of an apparatus which uses the standard model as taught by Stanley, thus facilitating the adjustment of system parameters, as discussed by Stanley **(see Col. 1, line 64 – Col. 2, line 10)**.

Consider claims 46 and 47 (and the above 101 rejection): Levinson discloses a method of creating a standard model which shows an acoustic characteristic having a specific attribute and is used for speech recognition **(see Col. 5, lines 12-24, where Levinson discusses a speech recognizer and Col. 12, lines 42-62, where Levinson discusses the model processing steps)**, using a probability model that expresses a frequency parameter showing an acoustic characteristic as an output probability **(see Col. 5, lines 27-39, where Levinson discusses**

acoustic features), said method comprising: a reference model reading step of reading at least

one reference model from a reference model storing unit which is operable to store at least one

reference model that is a probability model showing an acoustic characteristic having a specific

attribute **(see Col. 6, lines 6-15, where Levinson discusses stores and line 65 – Col. 7, line 5,**

where Levinson discusses loading a model based on LPC into RAM); and a standard model

creating step of creating the standard model by calculating statistics of the standard model using

statistics of the at least one reference model that has been read **(see Col. 12, lines 42-62, where**

Levinson discusses a processor which performs the model processing steps), wherein said

standard model creating step includes: a standard model structure determining sub-step operable

to determine a structure of the standard model which is to be created, on the basis of

specification information regarding specifications of the standard model **(see Col. 8, lines 20-35,**

where Levinson discusses the elements which comprise a model); an initial standard model

creating sub-step of determining initial values of the statistics specifying the standard model

whose structure has been determined **(see Col. 11, lines 50-55, where Levinson discusses**

prototype probabilities, therefore initial values); and a statistics estimating sub-step of

estimating and calculating the statistics of the standard model so as to maximize or locally

maximize a probability or a likelihood of the standard model, whose initial values have been

determined, with respect to the reference model **(see Col. 11, lines 65 – Col. 12, line 5, where**

Levinson discusses a maximum probability determination).

Levinson does not specifically disclose specification information regarding specifications of the

standard model which is to be created, however Stanley discloses specification information

regarding specifications of the standard model which is to be created **(see Col. 5, lines 39-49**

where Stanley discusses adjusting parameters of the system). It would have been obvious to

one skilled in the art at the time the invention was made to modify the invention of Levinson,

and use specifications of an apparatus which uses the standard model as taught by Stanley, thus

facilitating the adjustment of system parameters, as discussed by Stanley **(see Col. 1, line 64 –**

Col. 2, line 10).

Consider claim 30: Levinson discloses the specification information shows and

specifications of the standard model **(see Col. 8, lines 20-35, where Levinson discusses the**

elements which comprise a model .

Levinson does not specifically disclose specifications of an apparatus which uses the standard

model, however Stanley discloses specifications of an apparatus which uses the standard model

(see Col. 5, lines 39-49 where Stanley discusses adjusting parameters of the system). It

would have been obvious to one skilled in the art at the time the invention was made to modify

the invention of Levinson, and use specifications of an apparatus which uses the standard model

as taught by Stanley, thus facilitating the adjustment of system parameters, as discussed by

Stanley **(see Col. 1, line 64 – Col. 2, line 10)**.

Consider claim 31: Levinson and Stanley disclose the attribute includes information

regarding gender. **(see Col. 7, lines 30-44, where Stanley discusses gender)**

Consider claim 32: Levinson and Stanley disclose a specification information holding

unit operable to hold an application/specifications correspondence database showing a

correspondence between an application program which uses the standard model and

specifications of the standard model **(see Col. 5, lines 30-44, where Stanley discusses**

modules), wherein said standard model structure determining unit is operable to read

specifications corresponding to an application program to be activated from the application/specifications correspondence database held by said specification information holding unit, and to determine the structure of the standard model on the basis of the read specifications **(see Col. 7, lines 33-44, where Stanley discusses providing different data transformations for model data)**.

Consider claim 33: Levinson and Stanley disclose a specification information creating unit operable to create the specification information, wherein said standard model structure determining unit is operable to determine the structure of the standard model on the basis of the created specification information **(see Col. 5, lines 30-44, where Stanley discusses modules and Col. 7, lines 33-44, where Stanley discusses providing different data transformations for model data)**.

Consider claim 34: Levinson and Stanley disclose a terminal apparatus via a communication channel **(see Col. 6, lines 52-60 and line 65 – Col. 7, line 5, where Levinson discusses loading a model into RAM and Figure 3, where Levinson shows a BUS, therefore a channel)**, further comprising a specification information receiving unit operable to receive the specification information from said terminal apparatus **(see Col. 7, lines 33-44, where Stanley discusses user prompting and input)**, wherein said standard model structure determining unit is operable to determine the structure of the standard model on the basis of the received specification information **(Col. 7, lines 33-44, where Stanley discusses providing different data transformations for model data)**.

8.   Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Levinson (US

4,587,670) in view of Stanley (US 5,684,924) as applied to claim 29 above, and further in view

of Zhao (US 5,450,523).

Consider claim 35: Levinson and Stanley disclose each of the reference model and the

standard model is expressed using at least one distribution **(see Col. 3, lines 10-15, where**

Levinson discusses a probabilistic function), and said standard model structure determining

unit is operable to determine at least the number of distributions as the structure of the standard

model **(see Col. 8, lines 20-35, where Levinson discusses the elements which comprise a**

model).

Levinson does not specifically disclose Gaussian distribution, however Zhao discloses Gaussian

distribution **(see Col. 3, lines 20-30, where Zhao discusses training mixture Gaussian density**

models). It would have been obvious to one skilled in the art at the time the invention was made

to modify the invention of Levinson, and use Gaussian distribution as taught by Zhao, thus

allowing better performance in models of word unit or phoneme-sized units for word recognition

and speech recognition, as discussed by Zhao **(see Col. 1, lines 23-37)**.

9.   Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Levinson (US

4,587,670) in view of Zhao (US 5,450,523).

Consider claim 36: Levinson discloses a standard model creating apparatus for creating a

standard model which shows an acoustic characteristic having a specific attribute and is used for

speech recognition **(see Col. 5, lines 12-24, where Levinson discusses a speech recognizer and**

Col. 12, lines 42-62, where Levinson discusses the model processing steps), using a

probability model that expresses a frequency parameter showing an acoustic characteristic as an output probability **(see Col. 5, lines 27-39, where Levinson discusses acoustic features)**, said standard model creating apparatus comprising: a reference model storing unit operable to store at least one reference model which is a probability model showing an acoustic characteristic having a specific attribute **(see Col. 6, lines 6-15, where Levinson discusses stores)**; and a standard model creating unit operable to create the standard model by calculating statistics of the standard model using statistics of the at least one reference model stored in said reference model storing unit **(see Col. 12, lines 42-62, where Levinson discusses a processor which performs the model processing steps)**, wherein said standard model creating unit includes: a standard model structure determining unit operable to determine a structure of the standard model which is to be created **(see Col. 8, lines 20-35, where Levinson discusses the elements which comprise a model)**; an initial standard model creating unit operable to determine initial values of the statistics specifying the standard model whose structure has been determined **(see Col. 11, lines 50-55, where Levinson discusses prototype probabilities, therefore initial values)**; and a statistics estimating unit operable to estimate and calculate the statistics of the standard model so as to maximize or locally maximize a probability or a likelihood of the standard model, whose initial values have been determined, with respect to the reference model **(see Col. 11, lines 65 – Col. 12, line 5, where Levinson discusses a maximum probability determination)**, wherein each of the reference model and the standard model is expressed using at least one distribution **(see Col. 3, lines 10-15, where Levinson discusses a probabilistic function)**, said reference model storing unit is operable to store a pair of reference models, each having at least a different number of Gaussian mixture distributions **(see Figure 2, block 225 and Col. 4, lines 43-53,**

where Levinson discusses multiple models, and Col. 6, lines 6-15, where Levinson discusses

stores), and said statistics estimating unit is operable to calculate the statistics of the standard

model so as to maximize or locally maximize a probability or a likelihood of the standard model

with respect to the pair of reference models **(see Col. 11, lines 65 – Col. 12, line 5, where**

Levinson discusses a maximum probability determination).

Levinson does not specifically disclose Gaussian distribution, however Zhao discloses Gaussian

distribution **(see Col. 3, lines 20-30, where Zhao discusses training mixture Gaussian density**

models). It would have been obvious to one skilled in the art at the time the invention was made

to modify the invention of Levinson, and use Gaussian distribution as taught by Zhao, thus

allowing better performance in models of word unit or phoneme-sized units for word recognition

and speech recognition, as discussed by Zhao **(see Col. 1, lines 23-37).**

10.   Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Levinson (US

4,587,670) in view of Bielby (US 5,488,652).

        Consider claim 37: Levinson discloses a standard model creating apparatus for creating a

standard model which shows an acoustic characteristic having a specific attribute and is used for

speech recognition **(see Col. 5, lines 12-24, where Levinson discusses a speech recognizer and**

Col. 12, lines 42-62, where Levinson discusses the model processing steps), using a

probability model that expresses a frequency parameter showing an acoustic characteristic as an

output probability **(see Col. 5, lines 27-39, where Levinson discusses acoustic features),** said

standard model creating apparatus comprising: a reference model storing unit operable to store at

least one reference model which is a probability model showing an acoustic characteristic having

a specific attribute **(see Col. 6, lines 6-30, where Levinson discusses stores);** a reference model

preparing unit operable to perform obtaining a reference model from source and storing the obtained reference model into said reference model storing unit **(see Col. 6, lines 52-60 and line 65 – Col. 7, line 5, where Levinson discusses loading a model into RAM)** and a standard model creating unit operable to create the standard model by calculating statistics of the standard model using statistics of the at least one reference model stored in said reference model storing unit **(see Col. 12, lines 42-62, where Levinson discusses a processor which performs the model processing steps),** wherein said standard model creating unit includes: a standard model structure determining unit operable to determine a structure of the standard model which is to be created **(see Col. 8, lines 20-35, where Levinson discusses the elements which comprise a model);** an initial standard model creating unit operable to determine initial values of the statistics specifying the standard model whose structure has been determined **(see Col. 11, lines 50-55, where Levinson discusses prototype probabilities, therefore initial values);** and a statistics estimating unit operable to estimate and calculate the statistics of the standard model so as to maximize or locally maximize a probability or a likelihood of the standard model, whose initial values have been determined, with respect to the reference model **(see Col. 11, lines 65 – Col. 12, line 5, where Levinson discusses a maximum probability determination).**

Levinson does not specifically disclose an outside source, however Bielby discloses an outside source **(see Col. 8, line 66 – Col. 9, line 28, where Bielby discusses downloading modified parameters).** It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Levinson, and use an outside source as taught by Bielby, thus allowing the speech processor to use the modified version to achieve better performance, as discussed by Bielby **(see Col. 9, lines 25-30).**

11.   Claims 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Levinson (US 4,587,670) in view of Bielby (US 5,488,652) as applied to claim 37 above, and

further in view of Ittycheriah (US 5,895,447).

Consider claim 38: Levinson and Bielby disclose a reference model preparing unit is

operable to perform at least one of an update and an addition to the reference model stored in

said reference model storing unit, on the basis of information regarding an object of recognition

(see Col. 6, lines 52-60 and line 65 – Col. 7, line 5, where Levinson discusses loading a model

into RAM and see Col. 8, line 66 – Col. 9, line 28, where Bielby discusses downloading

modified parameters).

Levinson and Bielby do not specifically disclose usage information, however Ittichyriah

discloses usage information **(see Col. 9, lines 10-18, where Ittichyriah discusses building**

classes). It would have been obvious to one skilled in the art at the time the invention was made

to modify the invention of Levinson and Bielby, and use usage information as taught by

Ittichyriah, thus increasing the efficiency of the system, as discussed by Ittichyria **(see Col. 9,**

lines 10-15).

Consider claim 39: Levinson and Bielby disclose a similarity information creating unit

operable to create, on the basis of the reference model stored in said reference model storing unit

and information regarding an attribute which is an object of speech recognition, similarity

information showing a degree of similarity to the reference model and the information **(see Col.**

2, lines 8-25, where Levinson discusses similarity) wherein said reference model preparing unit

is operable to determine whether or not to perform at least one of an update and an addition to

the reference model stored in said reference model storing unit, on the basis of the similarity

information created by said similarity information creating unit (see Col. 7, lines 1 – 20, where

Levinson discusses distance metrics).

Levinson and Bielby do not specifically disclose usage information, however Ittichyriah

discloses usage information **(see Col. 9, lines 10-18, where Ittichyriah discusses building**

classes). It would have been obvious to one skilled in the art at the time the invention was made

to modify the invention of Levinson and Bielby, and use usage information as taught by

Ittichyriah, thus increasing the efficiency of the system, as discussed by Ittichyria **(see Col. 9,**

lines 10-15).

12.   Claims 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levinson

(US 4,587,670) in view of Campbell (US 6,038,535).

Consider claim 40: Levinson discloses a standard model creating apparatus for creating a

standard model which shows an acoustic characteristic having a specific attribute and is used for

speech recognition **(see Col. 5, lines 12-24, where Levinson discusses a speech recognizer and**

Col. 12, lines 42-62, where Levinson discusses the model processing steps), using a

probability model that expresses a frequency parameter showing an acoustic characteristic as an

output probability **(see Col. 5, lines 27-39, where Levinson discusses acoustic features)**, said

standard model creating apparatus comprising: a reference model storing unit operable to store at

least one reference model which is a probability model showing an acoustic characteristic having

a specific attribute **(see Col. 6, lines 6-15, where Levinson discusses stores)**; and a standard

model creating unit operable to create the standard model by calculating statistics of the standard

model using statistics of the at least one reference model stored in said reference model storing

unit **(see Col. 12, lines 42-62, where Levinson discusses a processor which performs the model processing steps)**, wherein said standard model creating unit includes: a standard model structure determining unit operable to determine a structure of the standard model which is to be created **(see Col. 8, lines 20-35, where Levinson discusses the elements which comprise a model)**; an initial standard model creating unit operable to determine, on the basis of an identifier that identifies a type of the standard model, initial values of the statistics specifying the standard model whose structure has been determined **(see Col. 11, lines 50-55, where Levinson discusses prototype probabilities, therefore initial values, and Col. 6, lines 31-40, where Levinson discusses recognizing different types of patterns)**; and a statistics estimating unit operable to estimate and calculate the statistics of the standard model so as to maximize or locally maximize a probability or a likelihood of the standard model, whose initial values have been determined, with respect to the reference model **(see Col. 11, lines 65 – Col. 12, line 5, where Levinson discusses a maximum probability determination)**.

Levinson does not specifically disclose a class ID that identifies a type, however Campbell discloses a class ID that identifies a type **(see Col. 3, lines 51-60, where Campbell discusses identifying a model as belonging to a particular class, and having a class label, therefore an identifier)**. It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Levinson, and use a class ID that identifies a type as taught by Campbell, thus enabling high accuracy classification, as discussed by Campbell **(see Col. 1, lines 9-15)**.

Consider claim 41: Levinson and Campbell disclose initial standard model creating unit is operable to specify the class ID from the reference model and to determine initial values

associated with the specified ID as the initial values **(see Col. 11, lines 50-55, where Levinson discusses prototype probabilities, therefore initial values, and Col. 6, lines 31-40, where Levinson discusses recognizing different types of patterns)**.

Consider claim 42: Levinson and Campbell disclose initial standard model creating unit is operable to hold a correspondence table showing a correspondence among the class ID, the initial values, and the reference model, and to determine the initial values in accordance with the correspondence table.

Consider claim 43: Levinson and Campbell disclose initial standard model creating unit is operable to generate the correspondence table by creating, or by obtaining from an outside source, an initial standard model with a class ID, that is, initial values associated with the class ID, or a reference model with a class ID, that is, a reference model associated with the class ID.

13.   Claims 44 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levinson (US 4,587,670) in view of Ittycheriah (US 5,895,447).

Consider claims 44 and 45 (and the above 101 rejection): Levinson discloses a method of creating a standard model which shows an acoustic characteristic having a specific attribute and is used for speech recognition **(see Col. 5, lines 12-24, where Levinson discusses a speech recognizer and Col. 12, lines 42-62, where Levinson discusses the model processing steps)**, using a probability model that expresses a frequency parameter showing an acoustic characteristic as an output probability **(see Col. 5, lines 27-39, where Levinson discusses acoustic features)**, said method comprising: a reference model reading step of selecting and reading, on the basis of information regarding an attribute which is an object of speech

recognition, at least one reference model from a reference model storing unit which is operable

to store at least one reference model that is a probability model showing an acoustic

characteristic having a specific attribute;

(see Col. 6, lines 6-15, where Levinson discusses stores and line 65 – Col. 7, line 5, where

Levinson discusses loading a model based on LPC into RAM); and a standard model creating

step of creating the standard model by calculating statistics of the standard model using statistics

of the at least one reference model read in said reference model reading step **(see Col. 12, lines**

42-62, where Levinson discusses a processor which performs the model processing steps),

wherein said standard model creating step includes: a standard model structure determining sub-

step of determining a structure of the standard model which is to be created **(see Col. 8, lines 20-**

35, where Levinson discusses the elements which comprise a model); an initial standard

model creating sub-step of determining initial values of the statistics specifying the standard

model whose structure has been determined **(see Col. 11, lines 50-55, where Levinson discusses**

prototype probabilities, therefore initial values); and a statistics estimating sub-step of

estimating and calculating the statistics of the standard model so as to maximize or locally

maximize a probability or a likelihood of the standard model, whose initial values have been

determined, with respect to the reference model **(see Col. 11, lines 65 – Col. 12, line 5, where**

Levinson discusses a maximum probability determination).

Levinson does not specifically disclose usage information, however Ittichyriah discloses usage

information **(see Col. 9, lines 10-18, where Ittichyriah discusses building classes)**. It would

have been obvious to one skilled in the art at the time the invention was made to modify the

invention of Levinson, and use usage information as taught by Ittichyriah, thus increasing the efficiency of the system, as discussed by Ittichyria **(see Col. 9, lines 10-15)**.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin E. Gaddy whose telephone number is (571) 270-5134. The examiner can normally be reached on M-TH 9am - 4pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro can be reached on (571) 272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Benjamin E. Gaddy

/Nick Corsaro/

Supervisory Patent Examiner, Art Unit 4181